

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Nikolai Mykola Ignatyev et al.

Examiner: Sun Jae Y. Loewe

Serial No.: 10/594,966

Group Art Unit: 1626

Filed: September 29, 2006

Confirmation No.: 5659

For: IONIC LIQUIDS HAVING FLUOROALKYL TRIFLUOROBORATE ANIONS

**REPLY BRIEF**

Mail Stop: AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The following discussion is presented in response to the newly clarified discussion in the Examiner's Answer which, for the first time, responds to issues raised in applicant's previous replies and in the Brief on Appeal. The issues raised in the Examiner's Answer, and appellant's replies, are set forth below:

*1. The MacFarlane article does not teach equivalence of imidazolium and pyrrolidinium cations in "the instant utility of ionic liquids." (Page 5 of the Examiner's Answer.)*

It is apparent from the above statement in the Examiner's Answer that there continues to be a misunderstanding of the utility of the present materials, which misunderstanding coupled with the misapplication of the law also surfaces in the discussion of the unexpected results. The quoted sentence of the Examiner's Answer indicates that the utility of the presently claimed compounds is "*ionic liquids*." The presently claimed compounds are ionic liquids, but status as an ionic liquid, of course, is not a "specific" utility in and of itself. The present ionic liquids are preferably used in the production of *electrolytes*, e.g., for use in batteries, as evident from the specification, at page 2, discussing prior art uses as electrolytes. Ionic liquids are well-known to have a wide variety of utilities, including as electrolytes, e.g., in electric batteries, but are also useable as sealants, solvents, and electrically conducting fluids in a variety of other utilities. For

example, ionic liquids can be used as acid scavengers in reactions, and currently as an important material in the production of cellulose. Ionic liquids are used as dispersing agents in paints, and as a transport medium for reactive gases such as trifluoro borane. Ionic liquids are also used in the purification of natural gas.

Comparison of properties of ionic liquids such as viscosity, as in MacFarlane, does not suggest equivalence of various cations across the broad range of utilities in which ionic liquids may be employed. It is thus clear that MacFarlane, which discloses as utilities for the ionic liquids “media in green chemistry” does not suggest any equivalence in the utility of Zhou, the primary reference, as electrolytes in batteries. Thus, the conclusion at page 5 of the Examiner’s Answer that “notwithstanding an absence of close structural similarity” between the cations “one of ordinary skill would be motivated to pair [pyrrolidinium with trifluoroborate] is seen to be a leap of logic not supported by the references.

*2. The unexpected results, and the advantage shown for the production of battery systems, are not shown in “a different utility than the instant utility of ionic liquids.”*

This conclusion above, at page 7 of the Examiner’s Answer, clearly is manifested by the misunderstanding of the true specific utilities of the present compounds, and the applicable law. It appears that the Examiner is under the misapprehension that saying in the specification that the present compounds are “ionic liquids” is their utility. On the contrary, first, the ionic liquids of the present specification are taught to be useable in electrochemical batteries. At page 2 of the present specification, various prior art references disclosing the use of ionic liquids as electrolytes (i.e., for use in batteries) are listed, and it is indicated that the present invention is a selection invention of one of these references. Second, the use of ionic liquids as electrolytes in batteries, for which the unexpected results are shown, is an important and well-known utility for electrolytes. Thus, the unexpected results do not relate to a different utility, but to the specific utility disclosed in the present specification, and/or to a well-known utility for ionic liquids. The data accordingly must be considered.

For these reasons, it is submitted again that ample basis to overturn the rejections of record exists, and the same is again respectfully requested.

Respectfully submitted,

/Harry B. Shubin/

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Harry B. Shubin (Reg. No. 32,004)  
Attorney for Applicant(s)

MILLEN, WHITE, ZELANO  
& BRANIGAN, P.C.  
Arlington Courthouse Plaza 1, Suite 1400  
2200 Clarendon Boulevard  
Arlington, Virginia 22201  
Telephone: (703) 243-6333  
Facsimile: (703) 243-6410

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